Ultra Low V_F Surface Mount Schottky Barrier Rectifiers

eSMP™ Series

Top View Bottom View

MicroSMP

The ultra low V_F Schottky optimized for forward voltage drop with high reverse current trade-off.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1 A
V_{RRM}	20 V, 30 V
I_{FSM}	30 A
V_F at I_F = 1.0 A	0.30 V
T_J max.	125 °C

APPLICATIONS

Application designed and qualified for hard disk driver where the V_F performance and size are required. HTIR is not a concern.

FEATURES

- Very low profile - typical height of 0.65 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- Caution: High reverse leakage
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**

RoHS COMPLIANT
HALOGEN FREE

MECHANICAL DATA

Case: MicroSMP

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker test

Polarity: Color band denotes the cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	MSS1P2U	MSS1P3U	UNIT
Device marking code		12U	13U	
Maximum repetitive peak reverse voltage	V_{RRM}	20	30	V
Maximum average forward rectified current at T_M = 110 °C	I_F	1.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	30		A
Operating junction temperature range	T_J	- 55 to + 125		°C
Storage temperature range	T_{STG}	- 55 to + 150		°C

MSS1P2U & MSS1P3U

Vishay General Semiconductor

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage (1)	I_F = 0.1 A I_F = 0.5 A I_F = 1.0 A	T_A = 25 °C	V_F	0.23 0.30 0.35	- - 0.40	V
	I_F = 0.1 A I_F = 0.5 A I_F = 1.0 A	T_A = 85 °C		0.16 0.24 0.30	- - 0.35	
Reverse current per diode (2)	V_R = 30 V	T_A = 25 °C T_A = 85 °C	I_R	0.4 12	1.2 30	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	68	-	pF

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

- Reverse power dissipation and the possibility of thermal runaway must be considered when operating this device under any reverse voltage conditions. Calculations of T_J therefore must include forward and reverse power effects.

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER	**SYMBOL**	**MSS1P2U**	**MSS1P3U**	**UNIT**
Typical thermal resistance (1)	$R_{\theta JA}$ $R_{\theta JM}$	170 30		°C/W

Note

(1) Free air, mounted on recommended copper pad area. Thermal resistance $R_{\theta JA}$ - junction to ambient, $R_{\theta JM}$ - junction to mount.

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
MSS1P3U-M3/89A	0.006	89A	4500	7" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

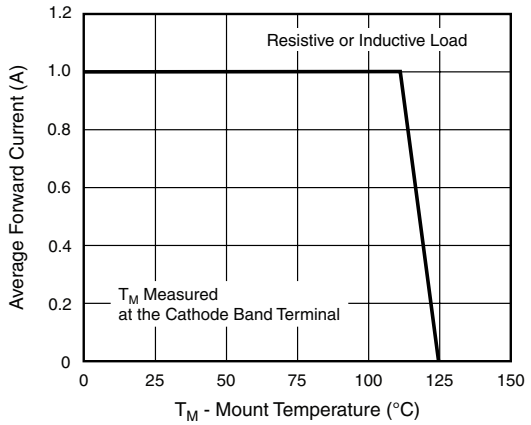

Figure 1. Maximum Forward Current Derating Curve

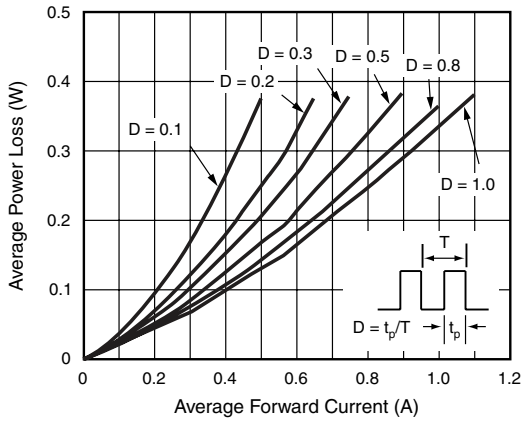

Figure 2. Forward Power Loss Characteristics

For technical questions within your region, please contact one of the following:
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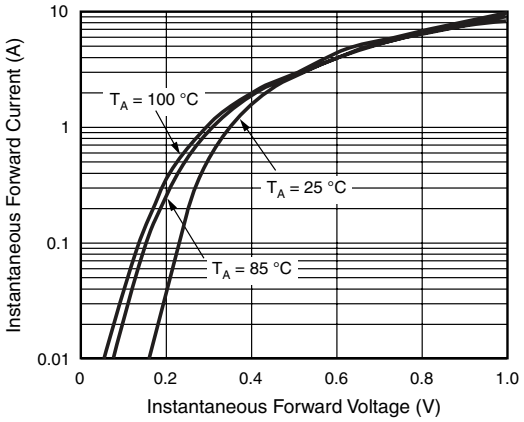


Figure 3. Typical Instantaneous Forward Characteristics

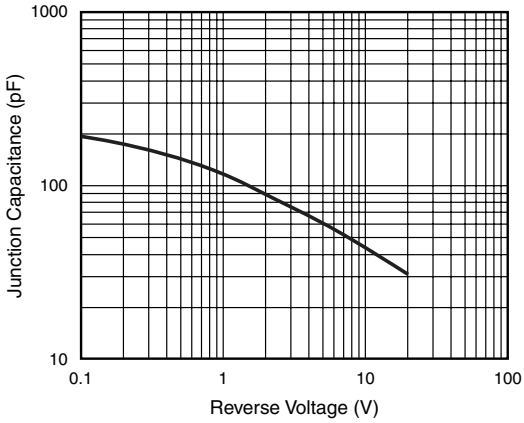


Figure 5. Typical Junction Capacitance

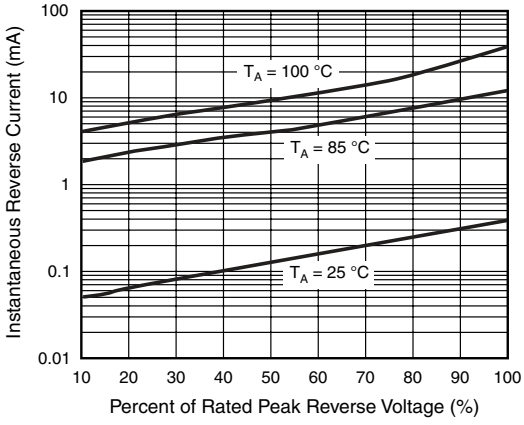


Figure 4. Typical Reverse Characteristics

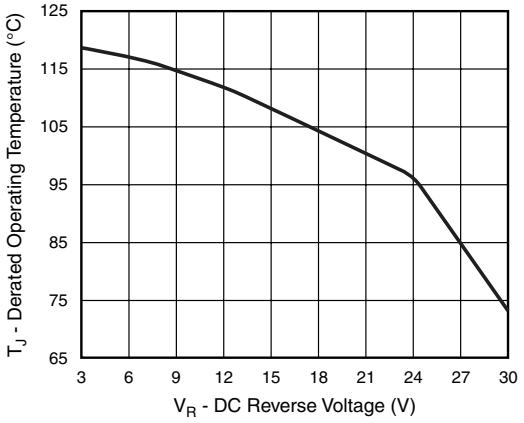
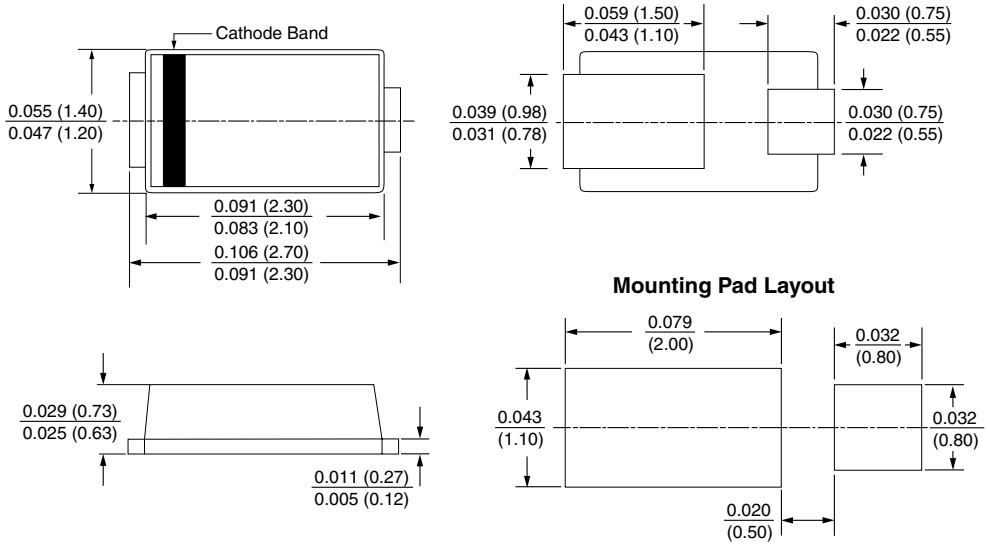


Figure 6. Typical Operating Temperature Derating

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

MicroSMP



Mounting Pad Layout

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